

CLAIMS:

1. A semiconductor single crystal manufacturing apparatus using a Czochralski method, comprising a crucible for pooling melt of a raw material of a semiconductor single crystal, and a plurality of heaters vertically disposed outside the crucible for heating and melting the raw material, wherein

a heat shield is provided in a space between the crucible and a substance which is disposed outside the plurality of heaters, the substance facing the plurality of heaters, or in the vicinity of the space.

2. The semiconductor single crystal manufacturing apparatus of claim 1, wherein the substance which is disposed outside the plurality of heaters, facing the plurality of heaters, is a heat insulating material.

3. The semiconductor single crystal manufacturing apparatus of claim 1, wherein the heat shield is provided in a gap between each of the plurality of heaters or in the vicinity of that gap.

4. The semiconductor single crystal manufacturing apparatus of claim 1 or claim 2, wherein

each of the heaters is independently supplied with electric power, and the heat shield is provided in a location in the vicinity of an area where an amount of generated heat is relatively low among heat distribution generated by all of the heaters.

5. The semiconductor single crystal manufacturing apparatus of claim 4, wherein the area where the amount of generated heat is low is provided by,

for a heater located on an upper side, adjusting a resistance value for heater respective portions such that an amount of generated heat in a heater lower portion is lower than that in a heater upper portion, and

for a heater located on a lower side, adjusting the resistance value for the heater respective portions such that an amount of generated heat in a heater upper portion is lower than that in a heater lower portion.

6. The semiconductor single crystal manufacturing apparatus of any one of claim 1 to claim 5, wherein the heat shield is provided around an entire periphery of the crucible.

7. The semiconductor single crystal manufacturing apparatus of any one of claim 1 to claim 5, wherein a material constituting the heat shield contains a graphite fiber material or graphite.

8. A graphite crucible, wherein the application therefor is the semiconductor single crystal manufacturing apparatus of claim 1 in which the heat shield is provided outside the crucible.